

Section II

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## General Responses

The purpose of this section is to display responses to the most common, critical, and substantive issues raised by the public during the comment period for the DEIR. The comments are first summarized and then addressed with responses that were compiled by the appropriate author of each resource-specific section of the DEIR. The General Responses are referenced in response to individual letters, form letters, agency letters, and oral comment.

### General Response 1. General Support or Lack of Support for Proposed Management Plan

**Summary of Public Comments:** Comments address a difference of or shared opinion with the proposed management methods in the Jackson Demonstration State Draft Forest Management Plan (DFMP) and do not directly apply to the impacts analysis conducted in DEIR. A wide variety of comments are addressed by the response to this general comment. Comments ranged from a general approval or disapproval of timber harvest of any sort on JDSF to recommendations for increased recreation opportunities. All comments of general support or general lack of support for the proposed DFMP are referred to this general response.

**Response to Comment:** The purpose of the DEIR is to analyze the environmental impacts of a particular project, in this case the DFMP. The DEIR addresses or dismisses from consideration several alternatives to the proposed action in the alternatives analysis section (DEIR Section VI Alternatives, pages 57-77), which may be of use in determining why other management actions were not part of the proposed action. Comments regarding the specific content of the DFMP were noted or briefly addressed, but are generally beyond the scope of CEQA required responses to comments.

### General Response 2: Insufficient Alternatives Analysis and Threshold of Significance Related Comments

**Summary of Public Comments:** Comments generally debate the significance of environmental impacts related to the project. Most comments of this nature claim a significant impact on a certain resource will result from an action in the DFMP, but generally lack supporting evidence for the claim. Some comments suggest that the consideration of other methods of impact analysis or existing resource studies may change the impact analysis in the DEIR.

Comments that generally recommend an additional alternative for analysis, but lack specific reasoning or evidence for doing so are also referred to this general response.

**Response to Comment:** CEQA provides the Lead Agency, CDF in this case, the authority to determine “threshold of significance” for impacts on environmental resources based upon

qualitative or quantitative standards. Compliance with existing regulatory standards generally results in less than significant impacts to resources. CEQA Guidelines, Section 15064.7, Subdivision (h) guides the Lead Agency to “rely on the vast body of regulatory standards” that have already undergone rigorous public agency review in determining thresholds and significant impacts. Subdivision (h), however, also establishes flexibility for the Lead Agency to establish whether existing regulatory standards are sufficient to protect an environmental resource from any significant impact that may result from the proposed project. The basis for the Lead Agency’s determination of whether a standard applies in a particular case must be based on “substantial evidence in the record that [the] standard is inappropriate to determine the significance of an effect.” The Lead Agency is not required to base their determination of applicable standards on information presented by project opponents that a standard is or is not appropriate or effective to protect a resource.

The DEIR is a comprehensive environmental analysis completed by professionals in their fields. It cannot hope to, and is not required to use every known method of analysis or analyze every imaginable alternative (CEQA Guidelines sec. 15088, 15204). The DEIR was completed in good faith and represents full disclosure of environmental impacts using the best available scientific information.

### **General Response 3: CDF Did Not Accept E-mail Comments from the Public**

**Summary of Public Comments:** Comments express dissatisfaction with the CDF decision not to accept emailed public comment.

**Response to Comment:** The public notice that initiated the public comment period for the JDSF DEIR clearly stated that all comments must be submitted in writing. Although CDF is allowed to accept email comments, the choice was made not to do so because of the difficulty in authenticating such responses. In most cases, emailed comments were replied to by CDF with an indication of proper comment format. A vast majority of emailed comments were sent in hardcopy to CDF and were entered into the public record. These comments received responses that are located in FEIR Section III.

### **General Response 4: Old Growth Concerns**

**Summary of Public Comments:** In general, there is support for old growth protection measures included in the DFMP, but they did not go far enough. Specifically, the comments indicated the DEIR should have identified that harvest of any old growth tree would result in a significant environmental impact.

**Response to Comment:** It is not reasonable to include a mitigation measure that would require every old growth tree be retained regardless of all other considerations. The DFMP provides protection measures to minimize impacts to old growth trees to less than significant, while allowing for the consideration of public safety and resources such as water quality and slope

stability. It is not reasonable to increase the risk of impacting water quality or slope stability to protect a single tree, when the removal of that tree will not result in a significant environmental impact. The desire to retain all old growth trees is a strongly held opinion by many people, but it is not required to reduce impacts to less than significant.

## General Response 5: Marbled Murrelet

**Summary of Public Comments:** The comments pertaining to Marbled Murrelets (MAMU) included:

- The DEIR did not correctly characterize the status of MAMU in adjacent Russian Gulch State Park,
- The DEIR did not mention the Federal Recovery plan for MAMU or provide a discussion of the Federal critical habitat designation of JDSF,
- The DFMP does not provide for the recovery of MAMU as required by CESA.

**Response to Comment:** The results of the CNDDDB query completed in preparation of this document (See page 225 of the DEIR) did not indicate that murrelets occur in the vicinity of Russian Gulch State Park. However, based on the new information provided in the comments to the DEIR and through discussion with Rene Pasquinelli (Senior Park Ecologist) of the Russian Gulch State Park, the language of the first paragraph on page 248 was incomplete. The following paragraph presents additional information to that portion on the DEIR:

*There have been numerous inland detections near JDSF. The first detection was in Russian Gulch State Park in 1976 (Paton and Ralph 1988), and the second detection was apparently 1km (0.6mi.) east of the town of Mendocino in 1988 (F. Sharpe, personal communication, as cited in Paton and Ralph 1988). According to Rene Pasquinelli (Personal communication), surveys completed annually over the last five years within Russian Gulch State Park have detected numerous murrelets flying up the Russian Gulch drainage, including "occupied behavior" type observations. Although no nest trees have been identified, this information suggests that murrelets are nesting in the Russian Gulch State Park.*

Additionally, the following sentence adds to the information contained in the second paragraph on page 248 of the DEIR: "*However, potential murrelet habitat was identified by Ken Hoffman (USFWS) on former G-P lands in the vicinity of the Mendocino Woodlands Recreation Area (R. Pasquinelli, Personal Communication).*"

The DEIR presents information on the existing conditions of JDSF in relation to Marbled Murrelet (MAMU) presence and potential habitat that may support MAMU. A discussion regarding the decline of murrelets and their habitat in the region is also included. A discussion on the current regulatory framework is provided indicating that USFWS must be consulted

where it is likely that a project could affect federally listed species. For the purpose of clarification, the DEIR should also have stated that DFG must also be consulted where it is likely that a project could affect federally listed species.

All stands occupied by murrelets, and potential habitat for murrelets, including Russian Gulch State Park, will be protected and/or provided buffers on a project basis through consultation with CDFG.

Standard protection buffers for stands occupied by murrelets include:

- 300-foot “No Cut” zone
- Consultation with DFG is required when operations are proposed to occur within 0.25 miles of potential habitat, extending to 0.5 if helicopter yarding is planned.

As described in the FPR, State Park Special Treatment Buffers shall be a minimum of 200 feet.

An evaluation of the DFMP in light of the existing conditions and regulatory framework was completed to determine if implementation of the FMP would result in significant impacts to MAMU or potential MAMU habitat. A determination was made that the implementation of the FMP would not result in significant impacts to MAMU or potential MAMU habitat. Utilizing JDSF to provide for the recovery on MAMU was not included as part of the proposed action or as an alternative considered in detail. Page 58 of the DEIR contains the rationale for not considering this alternative in detail.

The Federal Recovery plan for MAMU is referenced on page 244 of the DEIR, and a discussion of the critical habitat designation is provided starting on page 247. As stated in the DEIR, a federal agency that authorizes, funds or implements an action must consult with USFWS to ensure that the action will not adversely modify the critical habitat. Since the implementation of the FMP is a State action, the federal recovery plan and critical habitat designation are not applicable.

After analyzing the DEIR MAMU protection measures, old growth protection measures and late seral development strategies in the DFMP, the DEIR found that the proposed action would not result in significant impacts to MAMU, will protect existing habitat and lead to the development of new habitat over time. This will contribute to the recovery of the species as required in CESA.

In response to comments requesting additional protection for the timber stands within Russian Gulch, CDF will designate a research/demonstration area within the Russian Gulch watershed where management practices will be used to accelerate the recruitment of late-seral forest conditions. The area, consisting of approximately 450 acres, will use silvicultural stand management with the specific intention to accelerate the development of large trees with appropriate canopy closure and other habitat features to increase future marbled murrelet

habitat. CDF will consult with the US Fish and Wildlife Service and the California Department of Fish and Game on the development of appropriate silvicultural prescriptions to be applied in this area.

The designated area for this research/demonstration effort shares a border with the Woodlands Special Treatment Area near Road 408, creating a potential future flyway consisting of contiguous late-seral forest habitat.

## General Response 6: Program DEIR Limits Ability to Analyze Impacts of Specific Projects

**Summary of Public Comments:** Comments recognize a lack of consideration of impacts of particular timber harvest plans and specific projects.

**Response to Comment:** The JDSF DEIR is a Program DEIR. A Program DEIR is intended to analyze the broad impacts of an action that will receive additional environmental review as specific projects are carried out. In the case of the JDSF DFMP, further CEQA equivalent review will occur on specific timber harvest projects.

The DFMP is a general management plan for JDSF and was analyzed as such in the DEIR. Although there are many specific policies within the DFMP, it allows for a high degree of adaptive management. Specific adaptive management procedures will receive CEQA equivalent environmental review under the THP process (DEIR, p. 49).

## General Response 7: Late Seral and Mature Young Growth Concerns

**Summary of Public Comments:** A general concern expressed in many comments is that the DEIR did not find that the late seral management measures included in the DFMP adequate to prevent significant environmental effects to late seral habitat.

The two main issues are:

- The late seral development areas will not be effective in achieving the goal of providing late seral habitat, and;
- The DFMP does not provide protection for mature young growth outside of the late seral management areas that may already be providing late seral habitat.

A related issue is the commonly expressed opinion that the existing mature young growth on JDSF is a significant resource independent of any late seral habitat that it may provide, and that harvesting mature young growth would result in a significant environmental impact.

**Response to Comment:** The JDSF DFMP addresses late seral forests at several levels. Specific areas in the Forest are identified and mapped as Special Concern Areas (SCA) that will be managed for the development of late seral forest. Please refer to page 47 of the DFMP for a list of areas and estimated acreage. Late seral habitat development will be provided by either no harvesting to allow stands to develop in a non-managed state, or by understory thinning, selective harvest or other management activities designed to promote late seral characteristics. The DEIR found that about 20% of JDSF will be included in these areas including a large contiguous block in the Mendocino Woodlands STA, areas adjacent to three of the old growth groves and along the class I and II watercourses. Contrary to many comments, the late seral development areas associated with Class I and II watercourse will not be a thin strip of habitat isolated from upslope habitat. Although this may occur in limited instances, the vast majority of the class I and II watercourse late seral development areas will be bordered by a mosaic of timbered hillslopes providing for habitat connectivity. The DEIR found that the proposed late seral management practices proposed for the late seral forest development areas will protect late seral habitat that may currently exist in those areas and will provide for the development of additional late seral habitat.

In addition to these specific areas, there are other general areas that will be managed with consideration for development of late seral characteristics. On page 46 of the DFMP, the Plan indicates that uneven-age management will eventually produce stands with some degree of late seral elements or conditions. In the adaptive management section of the Plan, Timber Resources Goal 1 is to increase late seral forest conditions. In Appendix II – Detailed Goals and Objectives, one of the objectives under Goal 4 – Forest Restoration is to increase late seral forest. The DFMP also includes retention standards for snags and down logs, which are important characteristics of late seral habitat.

Taken together, the Plan proposes to manage specific areas for late seral forest development, but also consider the development of late seral forest characteristics, especially in the uneven-age management areas. The Executive Summary section (page iii), the Plan indicates that *“The Forest has grown to include mature second-growth timber stands, and the maturity of the forest will continue to develop through the preservation of unique stand elements and promotion of sustainable recruitment of late-seral elements.”* The potential for JDSF to promote the development late seral forest outside of the late seral development areas is tempered by the statement on page 29 that indicates late seral restoration has not been adopted as the primary mandate for JDSF, but existing old-growth and other areas of second-growth will be managed to expand the area of late seral forest. While not all of the uneven-aged management areas will be managed for the development of late seral forest, retention of late seral characteristics will be a significant goal, with the objective of retaining late seral forest characteristics and increasing late seral forest habitat across JDSF.

With this framework established in the DFMP, the DEIR analyzed the potential for the Plan to cause significant environmental effects by significantly reducing late seral habitat outside of the late seral development areas. In DEIR section 6.6.5 Wildlife Project Impacts, the DEIR found that although it is likely that some stands included in the acreage estimated as potential late seral habitat will be harvested during the life of the plan, the actual amount is unknown. This is



due to two factors. The first is that actual harvest areas are not known at this time. The short-term harvest schedule provides a projection of general areas that will be harvested, but the final harvest boundaries are not known at this time and would require substantial speculation to attempt to delineate them. The second factor is the lack of spatial accuracy of the seral stage classification of forest habitat in JDSF. The DEIR estimation of late seral habitat present on JDSF is based on an analysis of the estimated WHR types on the Forest. As described in the EIR, the estimation of area occupied by WHR types was developed by converting the JDSF vegetation types to WHR types through use of a crosswalk table. Although potentially confusing at first glance, crosswalk tables are a commonly used method of converting timber or vegetation types to WHR types. This conversion process resulted in a reasonable estimation of WHR type available across the entire forest, but does not produce results such that individual stands can be identified as late seral habitat. While forest seral stages as they exist in the field can be provided with a corresponding WHR classification, the WHR system cannot be used to alone to identify late-seral habitat. Furthermore, the DEIR emphasized that the numbers presented were estimates and that final classification as late seral habitat would require field evaluation. Given these parameters, the DEIR indicated that it is not feasible to determine how much late seral habitat will be harvested in the next 5 or 10 years. In addition, this precludes the production of a meaningful map that shows the locations of WHR types or late seral stands.

Even with these uncertainties, the DEIR found that the DFMP would not result in a significant environmental effect relating to a decrease in the availability of late seral habitat. One of the primary factors supporting this finding is that the FPRs address the potential harvest of late seral habitat. Compliance with the FPRs would minimize impacts on existing late seral habitat. Furthermore, the DEIR found that by minimizing impacts to existing late seral habitat, providing for retention of late seral habitat characteristics during harvest, and specifically managing about 20% of the Forest for the development of late seral habitat, the DFMP would have a beneficial impact on late seral habitat. This is with the understanding that the Forest is a dynamic place composed of a mosaic of age classes. As younger age classes mature, the DFMP will provide for retention of late seral forest characteristics, and the development of late seral forest.

Since the goals and objectives of the plan include the development of late seral forest, the Thornburgh analysis is provided to evaluate how uneven-age management would affect the development of a relatively young forest into a late seral forest. This analysis indicated that in the short-term late seral development would be minimal, but over the long-term, development would have significantly progressed. It is interesting to note that, based on the Thornburgh analysis, the group selection areas have the best potential for late seral development due in part to the development of gaps in the canopy that encourages the development of viable new age classes.

As previously stated, the DEIR found that the DFMP provisions to manage for late seral habitat would prevent an adverse impact and would actually provide a beneficial impact on late seral habitat—this would be both direct impacts and cumulative impacts. The general concept put forward in some comments is that that JDSF should not harvest mature young-growth because other landowners in the region have harvested substantial areas of mature young-growth. This

concept is based on the assumption that harvesting mature young-growth on JDSF would result in a significant cumulative impact. Section 15130(a)(3) of the CEQA guidelines indicates that if a project contributes its fair share of a mitigation measure designed to alleviate a cumulative impact, then the project's contribution to cumulative impacts is less than significant. The management direction provided in the DFMP will ensure that JDSF continues to contribute, at a minimum, its fair share of mature young-growth to the general region. The concept that harvesting mature young-growth forest in, and of itself, is a significant environmental impact is not supported by the FPR. On lands zoned for timber production, the FPRs indicate that timber harvesting and compatible uses are to be expected and will occur on such lands, and that the harvesting per se of trees shall not be presumed to have a significant adverse impact on the environment (14 CCR 897 (a) and 898). This means that if the impacts of timber harvesting have been considered and found to be less than significant, then the act of harvesting the trees cannot be considered a significant impact. Furthermore, the FPRs establish minimum ages for harvest using even-aged management that require harvesting mature timber, and the MSP standards require mature stands to be grown and harvested.

## General Response 8: Clear cutting and Even-Aged Management

**Summary of Public Comments:** The comments generally express disagreement with the even-age management and clear cutting proposed in the DFMP. Some comments go on to fault the DEIR for not concluding that clear cutting would result in significant environmental effects. Many comments indicate that there are large areas already clearcut that should be used for research, rather than cutting more areas. Others indicate that there are no benefits to be gained from additional clear cutting for research and demonstration.

**Response to Comment:** Even-aged management has specific economic and silviculture advantages that make it a valuable silvicultural method in the redwood region. This silvicultural method will continue to be widely used by both small and large landowners. Developing alternative even-age silvicultural practices that maintain the economic and silvicultural advantages, while minimizing environmental impacts would be a significant achievement. JDSF is the only ownership in the redwood region where this sort of information can be developed.

The dense mature second growth forest present on JDSF is the product of historic clear cutting on a broad scale as described in the DEIR. In more recent times, clear cutting has steadily declined as a silvicultural method within JDSF. Table 21 on DEIR page 161 indicates that 1,913 acres have been clearcut on JDSF since 1980. This is less than 4% of JDSF. The majority of the clear cutting occurred prior to 1990, with less than 300 acres of clear cutting since 1990. This does not appear to represent large tracts of recently clearcut land. One of the goals of JDSF is to maintain a diverse range of timber and habitat conditions, including some clearcut areas, to promote a diverse research program.

The DFMP provides a description of the desired future condition of the even-age management areas. It is expected that approximately 15 percent of the Forest (about half of the even-aged



area, or 7,128 acres) will be covered by stands that are less than 50 years of age at the end of a one hundred year period. Approximately 15 percent of the Forest will be occupied by even-aged stands between 50 and 150 years of age. Even-aged management as practiced on the Jackson Demonstration State Forest will generally produce two-storied stands, consisting of a main canopy layer of trees grown to the designated rotation age, and an overstory of a few to several trees per acre retained from the previous stand to provide a legacy of wildlife habitat elements.

Some comments pointed out that nearby industrial timberlands are “demonstrating” clear cutting, so there is no need for JDSF to demonstrate this method. However, the industrial lands are not demonstrating, they are utilizing the method. Their focus is on maximizing the economic and silvicultural benefits of the method rather than developing alternative even-aged methods. In addition, industrial owners are unlikely to commit tracts of land to long-term research as is required to demonstrate a silvicultural method.

So what can be demonstrated or researched in even-aged management areas? The demonstration of various rotation ages and structure tree retention levels as proposed in the DFMP will be beneficial for many landowners in the redwood region. Examples of what could be learned from the continued use of the even-aged silvicultural system as proposed in the DFMP include determining the most advantageous arrangement or orientation of retained structure trees. Others are: What wildlife species use clumped trees verses single widely spaced trees? What is the best size clump of trees to leave? How does slope and aspect affect wildlife use of retained structure? How does retained structure affect tree growth and stand development? What are the long-term affects or watershed scale effects of even-age management with structure tree retention verses uneven-aged management? Can retention of structure trees mitigate visual impacts of clear cutting? These sorts of questions can only be answered if even-aged management areas are included in the management of JDSF.

Numerous wildlife species, including many species of special concern, use clearcuts and other forest openings to fulfill one or more of their biological requirements. While extensive clearcuts that were part of the past were detrimental to many species because they removed extensive blocks of habitat and most key elements, clearcuts in today’s environment are of value as long as other forested habitats, including late successional habitats, are provided in the vicinity. The primary prey item of the spotted owl in coastal California is the woodrat, a species that is found in abundance within young stands similar to those produced within a few years after clear cutting. Spotted owls still require large patches of mature forests containing trees with cavities for nesting, but they also benefit from stand conditions produced by even-aged management techniques, including clear cutting. The purple martin, a California Species of Special Concern, prefers to nest in large snags located within forest openings. Although few sensitive species nest in clearcuts, many prey items and hunting opportunities occur in and along the edges of clearcuts. At the landscape level, maintenance of diverse habitats while retaining key habitat elements, such as snags and old growth, is beneficial to most species.

The impacts of the DFMP proposed even-aged management, including clear cutting, were assessed in the DEIR. The DEIR found that, as proposed in the DFMP and mitigated in the EIR,

even-age management would not have a significant impact on the environment. Mitigations were developed to address visual impacts of clear cutting. While there were other mitigations developed for harvest operations in general, no other mitigations were necessary to prevent or minimize the impacts of clear cutting. Although many members of the public may have an unfavorable opinion of clear cutting, the DEIR analysis indicates that when appropriately designed and mitigated, clear cutting does not have a significant effect on the environment.

## General Response 9: DEIR Lacks Sufficient Cumulative Impacts Analysis

**Summary of Public Comments:** Comments suggest inadequate consideration of cumulative impacts or claim that the DEIR completely lacks an analysis of cumulative impacts.

**Response to Comment:** Cumulative impacts are indeed a very important part of this and any program EIR. Section 15130 of the CEQA Guidelines requires that cumulative impacts be addressed in all EIRs.

The JDSF DEIR analyzed and presented cumulative impacts as a part of each appropriate resource specific section, but did not include a distinct cumulative impacts section. The following summary gathers information on past, present, and future projects and assembles the existing cumulative impacts analysis from resource specific sections of the DEIR for ease of review by readers. Cross-references are provided to the discussions of the subjects in the DEIR with page or section numbers.

### Past, Present and Future Cumulative Impacts Summary

Section 15103 of the CEQA Guidelines requires that an EIR must identify potentially significant cumulative impacts. Cumulative impacts analysis allows for the joint assessment of past, present, and reasonably foreseeable future projects related to the proposed action.

Past, present, and foreseeable future projects in the area that may cause DFMP impacts to be significant cumulative impacts are generally limited to other logging activities, road construction, or development. A comprehensive list of those past, present, and reasonably foreseeable projects that were taken into account in the DEIR for analysis of cumulative impacts is provided as Appendix 13.

### Cumulative Impacts On Resources

The resource categories discussed below were found to have some potential for cumulative impacts without mitigation. Mitigation measures to limit cumulative impacts to a less than significant level are provided.

### Cumulative Impacts On Aquatic Resources

The cumulative impacts to aquatic resources that may result from the proposed project include:

- Increased water temperature resulting from reduced in stream shading
- Increased sedimentation resulting from increased erosion
- Reduced recruitment of LWD
- Alteration of flow patterns resulting from changes in runoff characteristics
- Changes in stream channel geomorphology
- Changes in streamside vegetation
- Blockage of fish migration at stream crossings or other barriers

These types of changes in aquatic habitat conditions have been identified as factors in the decline of salmonid populations.

In CEQA terminology, this situation may be described as an adverse cumulative condition resulting from the impact of past projects related in a variety of ways. Populations of Steelhead and Coho salmon are generally recognized to be at levels well below those remembered from fifty to seventy years ago. A variety of factors have been suspected of contributing to the decline. These include changes in ocean fishing and ocean temperatures, increased river mouth predation, sedimentation of spawning gravels, loss of sheltering pools due to the removal of large woody debris and the down cutting of channels, warming of water due to the loss of shade along streams, reduction in food supplies from reduction of overhanging streamside vegetation, and other factors.

Some of these effects resulted from past timber harvesting activities through cutting and removal of trees and constructing roads. The removal of large woody debris resulted from the misguided but well-intentioned effort to improve stream conditions for fisheries. Other activities such as ocean and sport fishing are related only through impacts on a common resource. Debates have raged over the relative importance of the various factors. But this EIR limits its examination to factors over which CDF's management of JDSF may exercise some influence.

The project's contribution to cumulative impacts will be less than considerable based on the project design and the proposed mitigation. As discussed in the project impacts section for Aquatic Resources (section 6.1.6), impacts to aquatic resources have been mitigated to a less than significant level and are likely to lead to improved in-stream habitat conditions and improved fish population numbers. Habitat protection measures incorporated into the design of the proposed project are discussed in EIR sections 6.1.3 (Habitat Protection) and 6.1.4 (Monitoring and Adaptive Management). Examples of the protection measures are:

- Class I and II WLPZs will be managed to promote late-seral forest conditions
- WLPZs will include no harvest zones, or limited entry to improve salmonid habitat
- Overstory canopy cover will be maintained at high levels to provide shade cover

- Class I and II WLPZs will retain a minimize of 240 sq. ft. per acre of conifer basal area, and ten largest conifers per 330 feet of stream channel will be retained within 50 feet of the watercourse transition line
- With limited exceptions, salvage of dead or dying trees and retention of native hardwoods will not be permitted in WLPZs
- A road management plan will be implemented to minimize sediment production and delivery to watercourses
- Hillslope management guidelines are provided to address slope stability concerns

Mitigation measures 1 and 2 for aquatic resources resulting from the EIR process are included in EIR section 6.1.6 (Project Impacts). These mitigation measures are designed to ensure that sufficient levels of LWD are present in watercourses prior to harvesting, or provide for LWD recruitment if the LWD levels are below target levels.

When the current conditions are viewed in light of past projects, other current projects, and reasonably anticipated future projects, CDF believes that the effects of the proposed management plan will not contribute to a further degradation of the aquatic resources and will contribute to improvements in those resources. As explained more fully in the EIR, current timber harvesting plans are being conducted under greatly tightened controls through the Forest Practice Rules and the lessening and avoidance of impacts of individual THPs through CEQA review and analysis with other agencies. Areas along streams are being protected, and areas to be harvested are located farther away from streams than in the past. These actions should reduce erosion near streams; allow filtering of sediments in the forest floor litter between harvesting areas and streams; and result in the return of woody debris to the streams. Improved road management and the careful abandonment of old roads are expected to result in important reductions in erosion from road surfaces and stream crossings. The relocation of roads from along streams to ridge tops and the change to out-sloping of road surfaces is already reducing road caused sedimentation. Future projects that comply with the new management plan are expected to result in further improvements to aquatic resources.

Given the management practices included in the proposed project and the proposed mitigation measures developed through the EIR process, the proposed project will not result in a considerable contribution to cumulative impacts on aquatic resources.

#### Cumulative Impacts On Wetlands

Implementation of the Forest Management Plan when considered with past, present and reasonably foreseeable future projects will not result in significant impacts to wetlands. Protection to wetlands will be provided on a project or management activity basis. Direct impacts such as removal, filling or hydrologic interruption will be avoided and indirect impacts such as increased sedimentation will be minimized through the sediment reduction practices included in the Forest Management Plan. The proposed project will not result in a considerable contribution to cumulative impacts on wetlands.

**Cumulative Impacts on Late Successional Forest, Snags, Down Wood, Hardwoods, Riparian, and Other Unique/Special Habitats and Features**

The project's contribution to cumulative impacts will be less than significant based on the project design and proposed mitigation. As discussed in the project impacts section for Aquatic Resources (section 6.1.6), and Wildlife Resources (section 6.6.5), impacts to aquatic and wildlife resources have been mitigated to a less than significant level. Habitat protection measures incorporated into the design of the proposed project are discussed in EIR sections: 6.1.3 – Habitat Protection, 6.1.4 – Monitoring and Adaptive Management, 6.6.3 – Project Measures for Protection of Resources, and 6.6.6 – Mitigation and Monitoring.

**Cumulative Impacts on Wildlife Communities, Neotropical Birds, and Game Species**

The project's contribution to cumulative impacts will be less than significant based on the project design and proposed mitigation. As discussed in the project impacts sections for Wildlife Resources (section 6.6.5) and Aquatic Resources (section 6.1.6), impacts to aquatic and wildlife resources have been mitigated to a less than significant level. Habitat protection measures incorporated into the design of the proposed project are discussed in EIR sections: 6.1.3 (Habitat Protection), 6.1.4 (Monitoring and Adaptive Management), 6.6.3 (Project Measures for Protection of Resources), and 6.6.6 (Mitigation and Monitoring).

**Cumulative Impacts on the Lotis Blue Butterfly**

The project's contribution to cumulative impacts will be less than significant based on the project design and proposed mitigation. As discussed in the project impact sections for Wildlife Resources (section 6.6.5) and Botanical Resources (6.2.6), impacts to pygmy forest and *sphagnum* bogs have been mitigated to a less than significant level. Habitat and species protection measures incorporated into the design of the proposed project are discussed in EIR sections: 6.2.3 (Project Measures for Protection of Botanical Resources), 6.2.4 (Specific Management Actions), and 6.6.3 (Project Measures for Protection of Resources).

**Cumulative Impacts on Southern Torrent Salamander, Tailed Frog, Northern Red-legged Frog, Foothill Yellow-legged Frog, and Northwestern Pond Turtle**

The project's contribution to cumulative impacts will be less than significant based on the project design and proposed mitigation. As discussed in the project impacts sections for Wildlife Resources (section 6.6.5) and Aquatic Resources (section 6.1.6), impacts to aquatic and wildlife resources have been mitigated to a less than significant level and are likely to lead to improved instream and riparian habitat conditions. Habitat protection measures incorporated into the design of the proposed project are discussed in EIR sections: 6.1.3 (Habitat Protection), 6.1.4 (Monitoring and Adaptive Management), 6.6.3 (Project Measures for Protection of Resources), and 6.6.6 (Mitigation and Monitoring).

**Cumulative Impacts on Northern Goshawk, Cooper's Hawk, Bald Eagle, Golden Eagle, Osprey, Peregrine Falcon, Marbled Murrelet, Northern Spotted Owl, Vaux's Swift, Purple Martin, Yellow Warbler, Olive-Sided Flycatcher, and Pacific Fisher**

The project's contribution to cumulative impacts will be less than significant based on the project design and proposed mitigation. As discussed in the project impacts section for Wildlife Resources (section 6.6.5), impacts to wildlife resources have been mitigated to a less than significant level. Habitat protection measures incorporated into the design of the proposed project are discussed in EIR sections: 6.6.3 (Project Measures for Protection of Resources) and 6.6.6 (Mitigation and Monitoring).

## **Cumulative Impacts On Geologic and Soil Conditions**

Potential adverse cumulative effects associated with the proposed Forest Management Plan reflect the impacts associated with continued land management practices past, present, and future within JDSF itself, in combination with those that have occurred, are occurring, or may occur in the future in interconnected watersheds outside JDSF. From a geologic standpoint, significant adverse impacts are typically those associated with increases in the rates of landsliding and erosion that deliver sediment to watercourses. The fact that watersheds in JDSF and in the vicinity are listed by the E.P.A. as sediment impaired under Section 303 (d) of the Clean Water Act suggests that significant adverse cumulative effects have occurred in the region due to past management practices, and that there is a low threshold for future impacts.

As has been documented throughout the region, past timber harvest practices were far more harmful than those utilized following adoption of the modern Forest Practice Rules. The best-documented example of this is in the Caspar Creek watershed within JDSF, where studies show a significant decrease in sediment loading and peak storm flows following recent "modern" harvests (clear cutting with roads located in mid and upper slope positions in the North Fork of Caspar Creek) relative to earlier harvests (selective harvests with low slope roads in the South Fork of Caspar Creek). As such, future timber harvests must be weighed with the impacts associated with past harvests, since watersheds are clearly still recovering (see results of Lettis & Associates study discussing sediment storage in the Noyo River). Other past projects that have resulted in watershed impacts are primarily associated with the development of roads (Highway 20, residential roads, ranch roads, etc.). We are not aware of other significant developments or projects in the pertinent watersheds that have resulted in impacts that should be considered in a cumulative effects analysis.

Studies in Caspar Creek (Lewis, 1998) suggest that:

- 1) management impacts are generally proportional to the area disturbed, and
- 2) that the effects of multiple disturbances within a single watershed are approximately additive.

As such, it appears that a logical approach to limiting adverse cumulative watershed-scale impacts is to limit the amount of disturbance that occurs within a particular watershed within a



certain time frame. Unfortunately, current knowledge does not allow definition of a particular threshold of disturbance. As such, it is not currently feasible to define an appropriate rate of watershed impact or disturbance at the programmatic level of the proposed JDSF Forest Management Plan. Therefore it appears that adverse cumulative watershed impacts must be mitigated at a smaller scale.

The JDSF Forest Management Plan contains a wide range of elements intended to minimize management-related impacts at both the watershed and subwatershed scale. Subwatershed scale mitigation will occur primarily during the THP process and in enactment of the Road Management Plan. THP-level provisions include specific management practices to mitigate the potential to introduce sediment to area watercourses, and are described in the Watershed section of Chapter 3. That discussion describes specific goals for Riparian Management, Hillslope Management to Provide for Slope Stability, Logging Systems, Road Management Plan, and Water Quality. Day-to-day guidelines for roads, riparian zones, watercourses, and hillslopes are defined, and appear to include the current, state-of-the-practice approaches to low impact forest management.

Watershed scale mitigation will primarily result from the “monitoring and adaptive management” strategy outlined in Chapter 5. Monitoring is to be used to evaluate progress toward the stated goals of the Management Plan. Adaptive management refers to management strategies that will be utilized should monitoring indicate that “resource conditions begin to deviate from the desired trajectory.” The Management Plan defines specific Watershed Resource goals to mitigate road and crossing problem sites, to minimize erosion impacts, to minimize management-related landslides, and to maintain or improve aquatic and riparian habitat conditions and minimize sediment delivery to watercourses. In addition, the Plan proposed to “minimize potential cumulative watershed effects resulting from forest management activities” based on a long-term agreement between CDF and the USFS-PSW to continue conducting watershed research at Caspar Creek.

Past projects involving clear cutting of most of the forest while owned by the Casper Lumber Company and construction of roads and railroads through or alongside of stream channels contributed to erosion and mass wasting causing severely adverse conditions in streams. Early management by CDF in the 50s and 60s followed similar but less severe practices. Changes in the Forest Practice Rules caused CDF to locate new roads on ridgetops with outslipping surfaces causing major reductions in erosion from road surfaces and from mass wasting.

Current new road construction is limited to short extensions on ridgetops to allow for cable yarding at the top of timber harvesting plans or for helicopter yarding. Both yarding systems produce far less erosion than older methods. Further, the great reduction in new road construction is causing corresponding reductions in the amount of construction related erosion.

Future timber harvesting, limited road construction, and the new Road Management Plan are expected to cause further reductions in human caused erosion. The present and future practices are expected to reduce erosion to low levels that will enable streams to clear themselves of the

excess burden of sediments caused by past activities and to restore conditions favorable to high quality aquatic life.

The provisions contained within the proposed Forest Management Plan appear to define adequate steps to mitigate potential impacts that may lead to adverse cumulative effects, based primarily on state-of-the-practice management methodologies. In addition, it is likely that future TMDL studies will impose specific goals and thresholds that will define the level of appropriate impact associated with future management.

## Cumulative Impacts of Hazards and Hazardous Materials

Implementation of the Plan will result in continued use of hazardous materials, such as fuels, lubricants, and pesticides in compliance with the Forest Practice Rules and other applicable regulations. Requirements for the transport, storage, handling, and disposal of the hazardous materials that might be used at JDSF are established and enforced by the NCRWQCB, Department of Pesticide Regulation, and County Agricultural Commissioner. Any foreseeable increase in hazardous chemical use would still be within the acceptable limits established by the Mendocino County Agricultural Commissioner and the NCRWQCB. Compliance with all Federal and State laws, codes, and regulations will minimize to less than significant levels any potential impact that may result from the transport, storage, handling, and disposal of the hazardous materials.

Furthermore, based on evaluations CDF has conducted on this issue in relation to herbicide use by other landowners, potentially significant impacts related to the actual application of herbicides on JDSF are not expected. A CDF report titled *Environmental Effects of Herbicide Related to Timber Harvesting* (Norm Hill and Wendy Wickizer March 4, 2002) states that “*The effects are generally not cumulative impacts because uses related to different Timber Harvest Plans (THPs) are separated in time and distance so that their individual effects rarely reinforce or interact with each other.*” Additionally, the report states:

...the plan (THP) submitter is bound by State and Federal law to use herbicides only in accordance with their label restrictions: CDF finds that there is no significant adverse effect that will result from this plan related to herbicide use.

In the official response of THP 1-01-208 HUM, December 2001, CDF replied regarding the issue of herbicide use on this THP proposed by Pacific Lumber Company (PALCO). CDF based most of its responses on findings that were made in an EIR PALCO prepared for its Habitat Conservation Plan (HCP) as it relates to harvesting redwood timberland in Humboldt County. One of the responses states,

Applications will occur as part of the initial site preparation activities and are considered to the extent that vegetative re-invasion of the site will be delayed and because significant adverse impacts on the environment are not expected to occur from the

lawful use of herbicides.” Additionally the response states, “No mitigations were determined to be necessary with respect to limiting herbicide use based on an identifiable significant adverse impact (as it relates to CEQA).

Ultimately the response finds “*The herbicide use that could potentially be used in the plan area are not likely to have any significant impacts on the environment, humans, wildlife, or water quality.*”

Under the California Environmental Quality Act, the determination of a significant effect must be based on substantial evidence in the record (Pub. Res. Code sec. 21082.2). Controversy or intensely held opinions not based on substantial evidence will not justify deciding that an effect is significant. Due to the absence of substantial evidence that pesticides, when properly used, present a threat to the environment or human health, this EIR has concluded that pesticide use on JDSF is not a potentially significant effect on the environment.

## Cumulative Impacts On Hydrology and Water Quality

Cumulative impacts relating to peak flows and sedimentation have the potential to occur as a result of the proposed project. Project impacts are discussed in the Hydrology and Water Quality Section 10.4.3. In addition, Appendix 11 provided a detailed accounting of potential cumulative watershed effects (CWE) relating to peak flows and sedimentation.

### Peak Flow Cumulative Impacts

CWE relating to peak flows were assessed (refer to appendix 11) using the methodology presented by USFS Redwood Science Lab in the Review of Freshwater Flooding Analysis (Lisle et. al. 2000). This analysis was based on the harvest levels for the 20-year period from 1980 – 1999 and the projected harvest levels and methods included as part of the DFMP. The analysis indicates that peak flows generated from relatively small storms that occur early in the season (2-year storm return interval using a dry wetness index of 50) are expected to increase less than 11 percent. While no threshold standards have been determined for peak flow increases, studies (Lewis et al. 2001, Grant et al. 1999, Zeimer 1998) have indicated that peak flow increases in this range have been relatively benign, causing no significant adverse effects. Therefore, the proposed project will not result in a considerable contribution to peak flow related cumulative impacts.

### Sedimentation Cumulative Impacts

A discussion is provided in appendix 11 in regards to potential cumulative watershed effects related to sedimentation. Also, please refer to the previous Geologic and Soil Conditions section for additional discussion. In summary, management-related activities have accelerated the naturally high erosion and sedimentation rates. Increased erosion and sediment yields have been documented from roads, compacted areas, and mass wasting sites. However,

implementation of improved Forest Practice Rules (FPR) and Best Management Practices (BMP) over the last 20 years is considered to have significantly decreased sediment input to streams relative to past practices (Cafferata and Spittler 1998, Lewis 1998, CDF 1995, SWRCB 1987).

The relationship between peak flow increases, stream channel geomorphology and sedimentation is also discussed in appendix 11. In summary, studies completed in the North Fork Casper Creek indicated that increased volume of stream-flow following logging was strongly correlated to increased sediment delivery and transport (e.g. post-logging increased storm flows provide additional energy to deliver and transport available sediment). Other variables found to be significant were road cut and fill area and length of unbuffered stream channel, particularly in burned areas (Lewis et al. 2001). Channel geomorphology influences suspended sediment load transport and storage. Lewis et al. (2001) concluded that sediment loads are affected as much by channel conditions (e.g. organic debris, sediment storage sites, channel gradient, width-to-depth ratios) as by sediment delivery from the hillslopes. Similarly, Koehler et al. (2001) states that increases in suspended sediment loads from sediments trapped in long-term channel storage sites (10 to 100 or more years), and transported downstream during high flow events, have the potential to create an overestimation of the sediment generated by contemporary upslope management practices.

The most important explanatory variable in the aggregate analysis of the North Fork Caspar Creek sediment loads was increased stormflow (Lewis et al. 2001). As peak flow increases are greatest for the smallest peaks occurring during the driest antecedent conditions, Lewis et al. (2001) found most of the larger percentage increases in clearcuts were from small events and equated to relatively minor absolute increases in sediment load. Median percentage increases were greater in clearcut watersheds than in partially cut watersheds. As the peak flow increases diminish with vegetation growth, flow related increases in sediment load are expected to be short lived.

As the peak flow increases are anticipated to be relatively benign, the short-lived suspended sediment increases associated with peak flows are similarly anticipated to be relatively benign. of greater consideration are the silviculture and channel protection measures that have been shown to influence suspended sediment loads, and the road and landslide measures that have been shown to increase sediment inputs. Correspondingly, suspended sediment loads increase in clearcuts, in channels without buffers, and in small drainages that are burned and/or reshaped. Sediment delivery from landslides and road failures increase when failures are in close proximity to a watercourse (common along steep inner gorge settings, where roads are located adjacent and parallel to a stream, on improperly constructed roads and legacy roads, at road crossings, and roads with inadequate maintenance).

The proposed project was designed to mitigate these potential impacts by reducing the amount of clear cutting and modifying the silvicultural method to retain more vegetation, providing significant stream channel buffers for vegetation retention and equipment exclusion, minimizing burning adjacent to watercourse channels, implementation of a road management plan to minimize sediment delivery to watercourses from roads, and hillslope management practices to minimize mass wasting.

Given these management practices, the proposed project will not result in a considerable contribution to sedimentation related cumulative impacts.

## Noise Cumulative Impacts

Noise impacts are generally considered cumulatively significant if, in conjunction with past, present, or reasonably foreseeable future projects, they are not consistent with the local general plan, or would subject persons to noise levels above acceptable levels. Sensitive receptors considered in the analysis of implementation of the DFMP include recreation areas within the Forest itself and rural residences bordering the western edge of JDSF.

Logging related noise generally temporarily and intermittently generates noise levels significantly above ambient noise levels. Specific levels of noise generated during logging operations depend on the particular types, number, and usage rates of equipment used. In the absence of mitigation measures, implementation of the DFMP together with other foreseeable impacts in the area may cumulatively significantly increase the level of noise that certain sensitive receptors currently experience.

Such cumulative impacts that may result from noise due to the proposed project include:

- A substantial temporary or periodic increase in ambient noise levels above levels existing without the project will accompany any logging operations conducted under the DFMP. Sources of noise associated with logging likely to impact the noise environment in JDSF may include log trucks, yarding equipment, tractors, helicopters, saws, and other equipment. Under the DFMP, noise generated within JDSF by recreational uses such as shooting and ORVs will not significantly increase existing noise levels. Result in increase in noise in the project vicinity.

Without mitigation, project contributions to an increase in temporary or periodic ambient noise levels above established thresholds would be considered a significant cumulative impact when taken cumulatively with other potential high noise production activity on or near JDSF. The cumulative impact will be reduced to less than significance with incorporation of mitigation measures.

As discussed in the project impacts section for Noise (DEIR Section VII.12), impacts have been mitigated to a less than significant level. The mitigation measures are listed below with corrections from original form in the DEIR.

**Mitigation Measure:** Active timber operations within the vicinity of occupied campgrounds and picnic areas will be limited to weekdays and non-holidays. Noise abatement mitigation will be included in any timber sale within 1,000 feet of an open campground or within 200 feet of a residence, park, or other identified sensitive receptor. Camp hosts will be kept informed of activities associated with timber operations affecting campgrounds under their jurisdiction. In addition, noise and disturbance impacts on nest sites of listed species and neighbors will be

considered in decisions to prescribe helicopter use in logging operations. The Mendocino General Plan standards for residential dwellings in rural suburban communities will be used as a guide in assessing noise impacts expected from specific timber harvest operations.

The following helicopter flight modifications will be utilized when necessary to further mitigate noise impacts within and adjacent to JDSF to a level less than significant:

1. Buffer helicopter pads by using ridges or other solid sound attenuating landscape features where available and practicable.
2. Design helicopter flight paths to provide buffering distance from hiking trails, campgrounds, and areas inhabited by species of concern where necessary.
3. Where practicable, design helicopter flight paths using terrain features that would minimize noise reception by sensitive receptors (i.e. fly behind ridges).
4. Limit times of day for helicopter use to minimize impacts within and adjacent to JDSF.

In addition to mitigation measures specified within the DFMP, utilizing the Mendocino County General Plan and other existing standards as guidance in the development of mitigation will reduce noise impacts from timber operations within JDSF to a level less than significant (see Land Use section). Logging related noise levels likely to be generated under the DFMP are consistent with applicable state and federal noise standards.

Logging operations will increase ambient noise levels near an active timber harvest; however, given the temporary, remote and seasonal nature of timber harvest, mitigation measures will reduce noise impacts to a less than significant level.

Monitoring of mitigation measures will occur as specified in the Noise Section of the DEIR

## Cumulative Impacts On Botanical Resources

Cumulative impacts to botanical resources have the potential to occur as a result of ground or vegetation disturbing projects when considered in combination with past, current and reasonable foreseeable future projects. Adverse impacts are related to direct impacts to a sensitive species or indirect impact through habitat modification. A cumulative impact may occur if multiple ground or vegetation disturbing projects impact sensitive botanical resources to the degree that the range of a species is compromised or the population viability of a species on JDSF is compromised. However, the potential occurrence of this cumulative impact as a result of implementing the Forest Management Plan has been minimized through the design of the Forest Management Plan and mitigations proposed in the EIR.

Direct and indirect impacts are addressed through project level surveys and development of protection measures. In summary, the botanical protection measures include project specific scoping in consultation with DFG to assess potential impacts, project specific surveys to identify sensitive botanical resources, and development of appropriate mitigation measures to avoid or minimize impacts. The THP review process will provide DFG and the public the opportunity to



review and comment on proposed timber harvesting and botanical related mitigation measures developed for protecting botanical resources. Future THPs and other projects subject to CEQA review will also include additional cumulative impacts analysis including an assessment of sensitive botanical resources that will be affected by the project.

Cumulative impacts to botanical resources will be reduced to less than significant by avoiding and minimizing direct and indirect impacts to sensitive species as proposed in the FEIR, and from implementation of the monitoring and adaptive management strategy outlined in Management Plan chapter 5. Monitoring will evaluate the progress toward the goals on the management plan. Adaptive management refers to the change in management strategies that will occur if monitoring indicates that resources conditions are not progressing toward the goals of the management plan. This process will provide JDSF the flexibility to review and modify the design of botanical mitigation measures to ensure that mitigation measures are effective in protection botanical resources in JDSF. Conducting project specific surveys and providing positive findings of sensitive plants to DFG will allow JDSF and DFG to develop baseline data on sensitive plants so that the effectiveness of botanical protection measures can be evaluated. Developing and maintaining this type of data, and working with other agencies and resource professionals to evaluate the effectiveness of project objectives comprise the first goal of the Forest Management Plan. Implementation of the Forest Management Plan with the additional mitigation measures proposed in the EIR will not result in a considerable contribution to cumulative impacts on botanical resources.

## Cumulative Impacts On Timber Resources

Implementation of the DFMP was determined to have a potential adverse cumulative effect on the following Timber Resource value areas:

- Old Growth Forest
- Late Seral/Late Successional Forest Characteristics
- Maximum Sustained Production of High Quality Forest Products (MSP)
- Application of Silvicultural Methods and effects to other resource areas
- Conifer Species Diversity and Hardwood Management

The potential adverse cumulative effects related to old-growth forest values as a result of the DFMP implementation are expected to be less than significant in the short term, and likely result in positive or beneficial effects in the long term. As described in DEIR Section 6.3.6 regarding project impacts on page 178, presently there are 11 old-growth groves totaling 459 acres that are designated for retention. In addition, the DFMP identifies that aggregations (>2 acres) of existing old growth and individual old-growth trees within the larger young-growth stands will be retained with limited exceptions. There will be no reduction in old-growth forest, no reduction in old growth aggregations, and the potential for removal of residual old growth trees has been reduced to less than significant.

The DFMP also identifies that buffers adjacent to three of the groves are created to provide for late seral forest recruitment with protection measures provided similar to the old-growth groves. In addition to these protection measures for existing old growth, the DFMP provides for late seral recruitment in areas identified in the following paragraph that are expected to total over 23% of the JDSF land base. It would be expected that over the long term, old-growth forest values would be enhanced with the measures of old-growth retention and late seral forest recruitment as contained in the DFMP. No significant adverse short-term or long-term cumulative effects related to old-growth forest values are expected as a result of implementing the JDSF DFMP.

Under the California Environmental Quality Act, the determination of a significant effect must be based on substantial evidence in the record (Pub. Res. Code sec. 21082.2). Controversy or intensely held opinions not based on substantial evidence will not justify deciding that an effect is significant. Due to the absence of substantial evidence that the removal of a very limited number of individual old growth trees presents a threat to the environment, this EIR has concluded that the limited removal of old growth trees that is likely to occur as a result of the management plan is not a potentially significant effect on the environment.

Potential adverse cumulative effects related to late seral/successional forest characteristics as a result of the DFMP implementation is expected to be less than significant in the short term, and likely result in positive or beneficial effects in the long term. As described in DEIR Section 6.3.6 regarding project impacts on page 178-181, JDSF intends to recruit trees with late successional characteristics in areas that enhance the ecological effects of forests with these structural characteristics, such as the Mendocino Woodlands Special Treatment Area, areas adjacent to three of the old-growth groves, WLPZs, and other Special Concern areas. These areas managed for development of late seral structural conditions are expected to occupy approximately 20% of JDSF.

A near term assessment (15 years) of stand structure changes was included on pages 179-180, and it was determined that in the short term, development of late successional forest conditions will be minimal. A long term assessment (100 years) of stand structure changes was included on pages 180-181, and it was determined that in the long term, development of late successional forest conditions will be progressing towards optimum conditions found in late successional forests as a result of implementing the DFMP. It would be expected that over the long term, late successional forest conditions would be enhanced with the measures of old-growth retention and late seral forest recruitment as contained in the DFMP. No significant adverse short-term or long-term cumulative effects related to late successional forest conditions are expected as a result of implementing the JDSF DFMP.

Potential adverse cumulative effects related to maximum sustained production of high quality forest products (MSP) as a result of the DFMP implementation is expected to be less than significant in both the short term and long term. The JDSF allowable harvest level is predicated on the goal of non-declining inventory levels where the intent is to harvest less than growth in any 10 year rolling planning period. Presently, the JDSF has a LTSY projection of 40-50MMBF per year, and a present estimate of unconstrained measured growth of 65 MMBF per year, while

the proposed harvest level identified in the DFMP is 31 to 33 MMBF per year. Accounting for possible statistical variances of the growth estimates, it is expected the proposed harvest level will result in an inventory increase.

The LTSY projection was based on the Option “A” analysis performed for JDSF based on the growth model CRYPTOS calibrated to the empirical yield tables and constrained to 80% of maximum Stand Density Index. It was recognized that CRYPTOS was developed for use in even-aged redwood stands, but is currently the only growth and yield model available for use in redwood stands. Its use overestimates the growth rates of in-growth trees and predicts a higher future volume than actually experienced under an uneven-aged system. In the short term of 10 to 15 years, CRYPTOS can be used to accurately predict the growth and yield of the uneven-aged stands. However, over the long term, the ability of CRYPTOS to accurately predict stand development in uneven-aged stands, particularly the in-growth trees in the understory, is debatable.

Basing allowable harvest levels solely on this type of modeling could result in a long-term significant impact to timber growth and yield. The Forest staff recognized the potential for CRYPTOS to overestimate growth in uneven-aged management areas. In addition to establishing a conservative harvest level of 31-33 MMBF per year, the DFMP (chapter 5) commits the Forest to a monitoring and adaptive management program that includes growth and yield. Growth will be monitored as part of the continuous forest inventory system that will continue to be re-measured at five-year intervals. Furthermore, the Forest is working towards a long-term solution to the uneven-aged modeling problem. The Forest has committed to a number of growth and yield studies including the Asymmetrical Coast Redwood Growth Model Study that was initiated in 1986 to develop a process based coast redwood growth model that can be used on partial harvest and uneven-aged management areas. Re-measurement of the thinned stand using the developed specifications will be done during the latter part of the planning period to verify the growth model projections. The Casper Creek Cutting trials, the Long Term Pre-commercial Thinning Study, the Railroad Gulch study, the Whiskey Springs Thinning Study and other studies all have potential to provide growth and yield data that may address the uneven-aged modeling problem.

Given the conservative harvest level in comparison to growth, monitoring and adaptive management measures, and additional studies of growth and yield, no significant adverse short term or long term cumulative effects related to MSP are expected as a result of implementing the JDSF DFMP.

Potential adverse cumulative effects to other resource areas from application of silvicultural methods as a result of the DFMP implementation is expected to be less than significant in both the short term and long term. As contained on page 183 of the DEIR,

Implementation of the silvicultural allocation plan and short-term harvest schedule will create a diverse mosaic of forest age-class structures at the landscape level that will contribute to habitat stability, research opportunities, maintenance of biodiversity, and

functional forest ecosystems. The allocation of silvicultural systems addresses potential conflicts with State Forest recreational use and local public interest values. Practices similar to even-aged silviculture that would encompass five or more acres were minimized in management compartments adjacent to certain areas of special concern where management is constrained. Uneven-aged management, which tends to maintain a continuous forest canopy, has been incorporated within the management compartments with identified sensitive public interest values.

State Forest staff will continue to conduct site-specific assessments to determine the appropriateness of silvicultural prescriptions for any given area. The silvicultural allocation plan provides for protecting the recognized areas of special concern. Impacts related to these timber resource values are considered to be less than significant.

Table 25 on pages 184 and 185 provides silvicultural limitations for the various Special Concern Areas as identified in the DFMP. With these identified silvicultural limitations, silvicultural mitigation measures in the DFMP, on-going monitoring and site specific assessments to determine adequacy of resource protection and adaptive management, no significant adverse short term or long term cumulative effects to other resource areas from the application of identified silvicultural methods are expected as a result of implementing the JDSF DFMP.

Potential adverse cumulative effects related to conifer species diversity and hardwood management as a result of the DFMP implementation is expected to be less than significant in both the short term and long term. The DFMP provides for retaining conifer species diversity as required by the FPRs and managing hardwood species at levels, which more closely resembles natural conditions and is conducive to attaining MSP for the Forest. The DFMP identifies that redwood and Douglas fir are the favored conifer species for regeneration. Hemlock and grand fir are to be managed for no increase over current levels. Bishop pine is being controlled to remain a minor species where it occurs in commercial stands. Where artificial regeneration is used following a timber harvest, both redwood and Douglas-fir seedlings will be planted. The relative numbers of each species is determined after an assessment of the site to evaluate whether it is more suited for one species or the other.

Pages 185 and 186 of the DEIR identify a potential long-term effect on conifer species diversity.

A concern for long-term conifer species diversity exists where singletree selection or cluster selection silviculture is implemented over a longer period of time. The understory growth of shade intolerant redwood and Douglas fir is expected to be retarded due to light conditions more favorable to shade tolerant species hemlock and grand fir. This would result in higher percentages of hemlock and grand fir in the composition of the under story of the future stand, changing the conifer species diversity desired. The overstory would be expected to

trend toward all redwood and Douglas fir. Based on the preference for retention of redwood and Douglas fir stated in the DFMP, the majority of hemlock and grand fir will have been harvested from the overstory. Some of the trees not harvested would likely develop into snags or are blown down due to these species susceptibility to exposure and wind effects following thinning of the forest canopy. The continuing forest inventory will allow JDSF staff to monitor species diversity and adopt management techniques to prevent a significant change in species diversity.

The DFMP states on page 61 that:

JDSF will maintain the naturally occurring hardwood components in riparian stands (WLPZs) and other special concern areas when consistent with the objectives of that area. The goal is to maintain hardwood tree composition at approximately 10 percent (West End) to 15 percent (East End) of the stand basal area. Maintaining and recruiting hardwoods on JDSF, including larger size classes, will enhance not only wildlife species diversity but also forest structural diversity.

Page 60 of the DFMP states “*All hardwoods 36”DBH+ will be considered for retention.*” Individual hardwoods are retained in most stands in order to recruit hardwoods into larger size classes, and to develop valuable wildlife habitat elements. In areas of the Forest with an overabundance of hardwoods, the emphasis will be to restore the stands to a conifer-dominated condition. In addition to native hardwood species control, within the Eucalyptus infestation area identified above in the Special Concern Areas, silviculture methods are prescribed to control the spread of Eucalyptus.

With these identified measures to insure short term conifer species diversity, on-going monitoring and adaptive management to insure long term conifer species diversity, and identified measures to provide for suitable hardwood presence, no significant adverse short term or long term cumulative effects to conifer species diversity and hardwood management are expected as a result of implementing the JDSF DFMP.